

## CLAIMS:

We claim:

1. A method of preparing a sterilizing solution, comprising:
  - (a) storing dry solid material comprising one or more dipercarboxylic acid; and
  - (b) dissolving the dry solid material into water as needed to prepare an aqueous sterilizing solution having a dipercarboxylic acid concentration between about 0.1 weight percent and saturation.
2. The method of claim 1, wherein the solid material further comprises inorganic salts.
3. The method of claim 2, wherein the inorganic salts are provided in a stabilizing amount.
4. The method of claim 1, wherein the solid material is substantially free from organic compounds other than the one or more dipercarboxylic acid.
5. The method of claim 1, wherein the one or more dipercarboxylic acid is soluble in water in the absence of a solubilizer.
6. The method of claim 1, wherein the sterilizing solution is substantially free of hydrogen peroxide.
7. The method of claim 1, wherein the one or more dipercarboxylic acid is selected from diperglutaric acid, diperadipic acid, diperpimelic acid, dipersuberic acid, and diperazelaic acid, and combinations thereof.
8. The method of claim 1, wherein the amount of solid material dissolved into water is sufficient to be sporicidal.
9. The method of claim 1, wherein the amount of solid material dissolved into water is

sufficient to be sterilizing.

10. The method of claim 1, wherein the water is at ambient temperature.
11. The disinfecting solution formed by the method of claim 1.
12. The method of claim 1, further comprising:
  - (a) synthesizing one or more dipercarboxylic acid; and
  - (b) isolating the one or more dipercarboxylic acid form.
13. The method of claim 1, further comprising:
  - (a) dissolving one or more dicarboxylic acid in sulfuric acid;
  - (b) reacting the dicarboxylic acid with hydrogen peroxide to form dipercarboxylic acid;
  - (c) adding ammonium sulfate to precipitate the dipercarboxylic acid;
  - (d) washing the dipercarboxylic acid to remove sulfuric acid; and
  - (e) drying the dipercarboxylic acid.
14. The method of claim 13, further comprising:
  - (a) dissolving the dry dipercarboxylic acid in ethanol; and
  - (b) recrystallizing the dipercarboxylic acid by gradual addition of water; and
  - (c) filtering and drying the recrystallized dipercarboxylic acid to obtain solid particles of the dipercarboxylic acid.
15. The method of claim 13, wherein the ratio of hydrogen peroxide to dicarboxylic acid is about 4.
16. The method of claim 13, further comprising
  - (a) maintaining the reaction temperature between 0 and 20°C.
17. The method of claim 1, wherein the dry solid material further comprises one or more

organic solubilizers selected from long chain aliphatic fatty acids, long chain aliphatic quaternary ammonium salts, and combinations thereof.

18. A composition consisting of solid material that comprise one or more dipercarboxylic acid that is solid at room temperature and soluble at sterilizing concentrations in water.

19. The composition of claim 18, wherein the particles form a powder.

20. The composition of claim 18, wherein the one or more dipercarboxylic acid is selected from diperglutaric acid, diperadipic acid, diperpimelic acid, dipersuberic acid, and diperazelaic acid, and combinations thereof.

21. The method of claim 18, wherein the solid particles further comprise inorganic salts.

22. The method of claim 18, wherein the particles further comprise a dipercarboxylic acid-stabilizing amount of inorganic salts.

23. The method of claim 18, wherein the solid particles are substantially free from organic compounds other than the one or more dipercarboxylic acid.

24. The method of claim 18, wherein the one or more dipercarboxylic acid is soluble in water in the absence of a solubilizer.

25. The method of claim 22, wherein the inorganic salts are selected from sodium sulfate, magnesium sulfate, hydrated alkali metal salts, alkaline earth metal salts, and combinations thereof.

26. A composition consisting of solid particles that comprise one or more dipercarboxylic acids that is solid at room temperature and soluble at sterilizing concentrations in water.

27. The composition of claim 26, wherein the particles form a powder.

28. The composition of claim 26, wherein the particles are in colloid form.
29. The composition of claim 26, wherein the particles are in crystalline form.
30. The composition of claim 26, wherein the particles are in the form of tablets.
31. The composition of claim 26, wherein the one or more dipercarboxylic acids are selected from diperglutaric acid, diperadipic acid, diperpimelic acid, dipersuberic acid, dipersebacic acid, diperazelaic acid, and combinations thereof.
32. The composition of claim 26, wherein the solid particles further comprise stabilizers.
33. The composition of claim 32, wherein the stabilizers further comprise stannates, dipicolinic acid, pyrophosphoric and polypyrophosphoric acid and their salts.
34. The composition of claim 32, wherein the stabilizers comprise inorganic salts.
35. The composition of claim 26, wherein the solid particles are substantially free from organic compounds other than the one or more dipercarboxylic acids.
36. The composition of claim 26, wherein the one or more dipercarboxylic acids are soluble in water in the absence of a solubilizer.
37. The composition of claim 34, wherein the inorganic salts are selected from sodium sulfate, magnesium sulfate, hydrated alkali metal salts, alkaline earth metal salts, and combinations thereof.
38. The composition of claim 26, further comprising saturated organic compounds resistant to acid oxidation.

39. The composition of claim 38, wherein the saturated organic compounds are selected from long chain aliphatic fatty acids, long chain aliphatic quaternary ammonium salts, or combinations thereof.

40. The composition of claim 26, wherein the dipercarboxylic acid has enhanced hydrophobicity of an alkyl chain.

41. The composition of claim 40, wherein the hydrophobicity is enhanced by incorporation of polar functional groups in a carbon chain.

42. The composition of claim 41, wherein the polar functional groups are selected from hydroxyl, amino, amido, alkoxy, carbonyl groups or combinations thereof.

43. The composition of claim 26, wherein an exothermic control agent is admixed with the dipercarboxylic acid.

44. The composition of claim 43, wherein the exothermic control agent is selected from hydrated forms of  $\text{Na}_2\text{SO}_4$ ,  $\text{MgSO}_4$ , and combinations thereof.